

CLAIMS

1. Multi-speed transmission in planetary design, particularly an automatic transmission for a motor vehicle, comprising one input shaft (1) and one output shaft (2) located in one housing (G), three one-spider planetary gear sets (P1, P2, P3), at least seven rotatable shafts (1, 2, 3, 4, 5, 6, 7) and at least six shifting elements (03, 04, 14, 26, 36, 57) including brakes and clutches the selective engagement of which generates different reduction ratios between the input shaft (1) and the output shaft (2) so that seven forward gears and one reverse gear can be implemented, characterized in that the input drive results by a shaft (1) permanently connected with the sun gear of the first planetary gear set (P1), that the output drive results via one shaft (2) permanently connected with the sun gear of the third planetary gear set (P3), that one shaft (4) is permanently connected with the ring gear of the first planetary gear set (P1) and the ring gear of the second planetary gear set (P2), that one shaft (5) is permanently connected with one element of the second planetary gear set (P2) and the ring gear of the third planetary gear set (P3), that one shaft (6) is permanently connected with one other element of the second planetary gear set (P2), that one shaft (7) is permanently connected with the spider of the first planetary gear set (P1), wherein the shaft (3) is attachable to the housing (G) by one brake (03), the shaft (4) is attachable to the housing (G) by one brake (04), one clutch (14) detachably interconnects the shaft (1) and the shaft (4), one clutch (26) detachably interconnects the shaft (2) and the shaft (6), one clutch (36) detachably interconnects the shaft (3) and the shaft (6) and one clutch (57) detachably interconnects the shaft (5) and the shaft (7).

2. Multi-speed transmission according to claim 1, characterized in that the shaft (5) is permanently connected with the sun gear of the second planetary gear set (P2) and the ring gear of the third planetary gear set (P3) and that the shaft (6) is permanently connected with the spider of the second planetary gear set (P2).

3. Multi-speed transmission according to claim 1, characterized in that the shaft (5) is permanently connected with the spider of the second planetary gear

set (P2) and the ring gear of the third planetary gear set (P3), and that the shaft (6) is permanently connected with the sun gear of the second planetary gear set (P2).

4. Multi-speed transmission according to claim 1, characterized in that the first planetary gear set (P1) and the third planetary gear set (P3) are designed as minus planetary gear sets and that the second planetary gear set (P2) is designed as plus planetary gear set.

5. Multi-speed transmission according to any one of the preceding claims, characterized in that additional free wheels can be used on each adequate place.

6. Multi-speed transmission according to claim 5, characterized in that the free wheels are provided between the shaft (1, 2, 3, 4, 5, 6, 7) and the housing (G).

7. Multi-speed transmission according to any one of the preceding claims, characterized in that input drive and output drive are provided on the same side of the housing.

8. Multi-speed transmission according to any one of the preceding claims, characterized in that one axle and/or one transfer differential is situated on the input side or the output side.

9. Multi-speed transmission according to any one of the preceding claims, characterized in that the input shaft (1) can be separated from a prime mover by a coupling element.

10. Multi-speed transmission according to claim 9, characterized in that as coupling element is provided a hydrodynamic converter, a hydraulic clutch, a dry starting clutch, a wet starting clutch, a magnetic powder clutch or a centrifugal clutch.

11. Multi-speed transmission according to any one of the preceding claims, characterized in that an external starting element, especially according to claim 10, can be disposed in power flow direction behind the transmission, the input shaft (1) being fixedly connected with the crank shaft of the engine.

12. Multi-speed transmission according to any one of the preceding claims, characterized in that the start off results by means of a shifting element of the transmission, the input shaft (1) being permanently connected with the crankshaft of the engine.

13. Multi-speed transmission according to claim 12, characterized in that as shifting element the clutch (57) or the brake (04) can be used.

14. Multi-speed transmission according to any one of the preceding claims, characterized in that one torsional vibration damper can be placed between engine and transmission.

15. Multi-speed transmission according to any one of the preceding claims, characterized in that one wear-free brake can be situated upon each shaft.

16. Multi-speed transmission according to any one of the preceding claims, characterized in that upon each shaft one power takeoff can be placed for driving additional units.

17. Multi-speed transmission according to claim 16, characterized in that the power takeoff can be situated on the input shaft (1) or the output shaft (2).

18. Multi-speed transmission according to any one of the preceding claims, characterized in that the shifting elements are designed as power shiftable clutches or brakes.

19. Multi-speed transmission according to claim 18, characterized in that multi-disc clutches, band brakes and/or tapered clutches can be used.

20. Multi-speed transmission according to any one of claims 1 to 17, characterized in that force-locking brakes and/or clutches are provided as shifting elements.

21. Multi-speed transmission according to any one of the preceding claims, characterized in that on each shaft one electric machine can be mounted as generator and/or as added prime mover.